

RESPONSE TO RESTRICTION REQUIREMENT

Serial Number: 09/816,603

Filing Date: March 23, 2001

Title: CONTINUOUS PROCESSING OF THIN-FILM BATTERIES AND LIKE DEVICES

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Remarks

Claims 1-10 are cancelled. Claims 29-41 are added. These claims are supported by the original claims, and are directed to the elected invention. No new matter is added. Claims 11-41 are pending consideration.

Conclusion

The Examiner is invited to contact Applicant's Representative if there are any questions regarding this Response or if prosecution of this Application may be assisted thereby.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, Washington, D.C. 20231, on this 5th day of December, 2002.

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Signature

CLEAN VERSION OF PENDING CLAIMS

al 11. [Amended Once] A system for making a thin-film device, the system comprising:
a first substrate-supply station that supplies a substrate having a major surface area, the substrate having a first layer, having a composition different than the substrate, formed on a first surface area of the substrate's major surface area;

a first deposition station that deposits a second layer onto the first layer, wherein the first deposition station supplies an amount of ion-assist energy to the second layer to aid in crystalline layer formation while controlling a stoichiometry of the crystalline layer without substantially heating the substrate.

12. The system according to claim 11, wherein the first and second layers are part of a battery, the system further comprising:

a deposition station that deposits a photovoltaic cell on the battery.

13. The system according to claim 12, the system further comprising:

a station that attaches an integrated circuit to the substrate; and

a wiring station that forms conductive paths between the integrated circuit, the battery and the photovoltaic cell.

al 14. [Amended Once] The system according to claim 11, the system further comprising:

a motion device that moves the substrate, wherein the first and second layers are deposited on the substrate while the substrate moves in a continuous motion.

15. The system according to claim 11, wherein the substrate is a flexible material supplied from a roll, and the first and second layers are deposited on the substrate while the substrate moves in a continuous motion.

16. The system according to claim 11, wherein the first and second layer forms a cathode

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layer of a battery including the cathode layer; an anode layer, and an electrolyte layer located between and electrically isolating the anode layer from the cathode layer, wherein the anode or the cathode or both include an intercalation material.

17. The system according to claim 11, further comprising a deposition station that deposits an electrical circuit on the battery.

18. The system according to claim 11, wherein the substrate is a rigid material supplied from a cassette, and the first and second layers are deposited on the substrate while the substrate moves in a continuous motion.

19. The system according to claim 11, wherein the substrate is a polymer material having a melting point below about 700 degrees Celsius.

20. The system according to claim 11, wherein the energizing of the second layer includes supplying ions of at least 5eV.

21. A system for making a thin-film device, the system comprising:
a substrate-supply station that supplies a substrate having a major surface area, the substrate having a first layer on a first surface area of the substrate's major surface area;
means for depositing a second layer onto the first layer, wherein the means supplies energy to the second layer to aid in layer formation without substantially heating the substrate.

22. [Amended Once] A system for making a thin-film device, the system comprising:
a substrate-supply station that supplies a substrate having a major surface area;
a plurality of deposition stations that deposit layers onto the substrate including a first deposition station and a second deposition station, wherein the first and the second deposition stations each supply energy to the layer to aid in crystalline layer formation while controlling a stoichiometry of the respective crystalline layers without substantially heating the substrate.

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23. [Amended Once] The system of claim 22 wherein the substrate-supply station supplies a continuous plastic sheet.
24. [Amended Once] The system of claim 22 wherein the substrate-supply station supplies a continuous set of wafers.
25. [Amended Once] The system of claim 22 wherein the plurality of deposition stations deposit a thin film battery.
26. [Amended Once] The system of claim 22 wherein the plurality of deposition stations deposits a capacitor.
27. [Amended Once] The system of claim 22 wherein the plurality of deposition stations deposits a thin film battery and a device powered by the thin film battery.
28. [Amended Once] The system of claim 22 wherein the plurality of deposition stations deposit a thin film battery and a device powered by the thin film battery, wherein the device is deposited onto the thin film battery.
29. [Amended Once] The system of claim 22 wherein the plurality of deposition stations deposit a thin film battery and a set of traces for electrically connecting a device to the thin film battery.
30. [Amended Once] The system of claim 29 further comprising a placement device for placing components onto the traces.
31. [Amended Once] The system of claim 22 wherein the at least one deposition station deposits an energy-conversion device.

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32. [New] The system of claim 11, wherein the second layer is a LiCoO_2 intercalation material, and the ion-assist includes ionized oxygen that combines with LiCo to form the LiCoO_2 intercalation material.

33. [New] The system according to claim 11, further comprising
a second substrate-supply station that supplies a substrate having a major surface area;
a second deposition station that deposits the first layer onto the substrate, wherein the second deposition station supplies ion-assist energy to the first layer to aid in crystalline layer formation while controlling a stoichiometry of the crystalline layer without substantially heating the substrate.

34. [New] A system for making a thin-film device, the system comprising:
a first substrate-supply station that supplies a substrate having a major surface area, the substrate having a first layer, having a composition different than the substrate, formed on a first surface area of the substrate's major surface area;
a first deposition station that deposits a second layer onto the first layer, wherein the first deposition station supplies an amount of ion-assist energy to the second layer to aid in crystalline layer formation while controlling a stoichiometry of the crystalline layer without substantially heating the substrate, wherein the substrate is a flexible material supplied from a roll, and the first and second layers are deposited on the substrate while the substrate moves in a continuous motion, wherein the first and second layer forms a cathode layer of a battery including the cathode layer; an anode layer, and an electrolyte layer located between and electrically isolating the anode layer from the cathode layer, wherein the anode or the cathode or both include an intercalation material.

35. [New] The system according to claim 34, further comprising a second deposition station that deposits an electrical circuit layer on the battery.

36. [New] The system according to claim 34, wherein the substrate is a polymer material

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having a melting point below about 700 degrees Celsius.

37. [New] The system according to claim 34, wherein the energizing of the second layer includes supplying ions of at least 5eV.

38. [New] The system according to claim 34, wherein the substrate is a polymer material having a melting point below about 700 degrees Celsius, and wherein the energizing of the second layer includes supplying ions of at least 5eV.

39. [New] The system according to claim 21, wherein the substrate-supply station supplies a continuous plastic sheet.

40. [New] The system according to claim 21, wherein the substrate-supply station supplies a sequential set of wafers.

41. [New] The system according to claim 21, wherein the means deposit a thin film battery.